



KRAMER ELECTRONICS LTD.

# USER MANUAL

MODEL:

**VM-2HDxI**  
3G HD/SD – SDI DA

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P/N: 2900-000318 Rev 2

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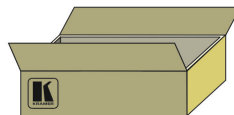
## VM-2HDxI Quick Start Guide

This page guides you through a basic installation and first-time use of your **VM-2HDxI**. For more detailed information, see the **VM-2HDxI** User Manual. You can download the latest manual at <http://www.kramerelectronics.com>.

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### Step 1: Check what's in the box

- |   |   |
|---|---|
| <input checked="" type="checkbox"/> <b>VM-2HDxI</b> 3G HD/SD – SDI DA | <input checked="" type="checkbox"/> 1 Quick Start sheet |
| <input checked="" type="checkbox"/> 1 Power supply (12V DC)           | <input checked="" type="checkbox"/> 1 User Manual       |
| <input checked="" type="checkbox"/> 4 Rubber feet                     |   |



Save the original box and packaging in case your product needs to be returned to the factory for service.

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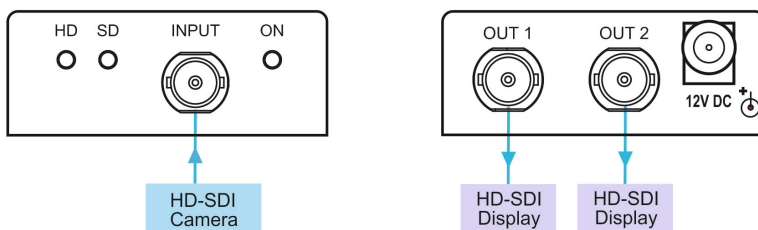
### Step 2: Install the VM-2HDxI

Mount the machine in a rack (using the RK-4PT rack adapter) or place on a table.

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### Step 3: Connect the inputs and outputs

Always switch off the power on each device before connecting it to your **VM-2HDxI**.



Always use Kramer high-performance cables for connecting AV equipment to the **VM-2HDxI**.

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### Step 4: Connect the power

Connect the 12V DC power adapter to the **VM-2HDxI** and plug the adapter into the mains electricity.



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# 1 Introduction

Welcome to Kramer Electronics! Since 1981, Kramer Electronics has been providing a world of unique, creative, and affordable solutions to the vast range of problems that confront the video, audio, presentation, and broadcasting professional on a daily basis. In recent years, we have redesigned and upgraded most of our line, making the best even better!

Our 1,000-plus different models now appear in 11 groups that are clearly defined by function: GROUP 1: Distribution Amplifiers; GROUP 2: Switchers and Matrix Switchers; GROUP 3: Control Systems; GROUP 4: Format/Standards Converters; GROUP 5: Range Extenders and Repeaters; GROUP 6: Specialty AV Products; GROUP 7: Scan Converters and Scalers; GROUP 8: Cables and Connectors; GROUP 9: Room Connectivity; GROUP 10: Accessories and Rack Adapters and GROUP 11: Sierra Products.

Congratulations on purchasing your Kramer **VM-2HDxl 3G HD/SD – SDI DA**, which is ideal for the following typical applications:

- SDI production studios for signal distribution and equalizations
- Broadcast studios for on-air operation and SDI field production
- Using with SDI video sources such as professional digital cameras

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## 2 Getting Started

We recommend that you:

- Unpack the equipment carefully and save the original box and packaging materials for possible future shipment
- Review the contents of this user manual
  - Use Kramer high performance high resolution cables
  - Use only the power cord that is supplied with this machine



Go to <http://www.kramerelectronics.com> to check for up-to-date user manuals, application programs, and to check if firmware upgrades are available (where appropriate).

### 2.1 Achieving the Best Performance

To achieve the best performance:

- Use only good quality connection cables to avoid interference, deterioration in signal quality due to poor matching, and elevated noise levels (often associated with low quality cables)
- Avoid interference from neighboring electrical appliances that may adversely influence signal quality
- Position your Kramer **VM-2HDxI** away from moisture, excessive sunlight and dust

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## 3 Overview

The **VM-2HDxI** is a high-performance distribution amplifier for 3G HD-SDI signals. The unit takes one input, provides reclocking and equalization and distributes the signal to two identical outputs.

In particular, the **VM-2HDxI** features:

- Cable equalization up to 300m  
300m for SD signals; 200m for 1.5GHz HD signals; 100m for 3GHz HD signals (measured with Kramer BC-1X 1 Coax RG-6 Super High-Resolution Cable).
- One input and two identical outputs on BNC connectors
- A data rate of up to 3Gbps, that enables it to be used for standard definition, high definition and the 3G high definition serial digital video signals (SDI, HD-SDI and 3G HD-SDI)
- HDTV compatibility
- Passing of digital information (embedded audio, Teletext, time code and so on) during the blanking period
- SMPTE 292M, 259M, 344M and 424M compliant with data rates of 270Mbps, 540Mbps, 1483.5Mbps, 1485Mbps and 2970Mbps
- Automatic, multi-rate, equalization and reclocking for losses typical with long runs of 75Ω co-axial cable up to 300m
- LEDs indicating the SDI resolution (SD or HD)

### 3.1 Defining the VM-2HDxI

This section defines the **VM-2HDxI**.

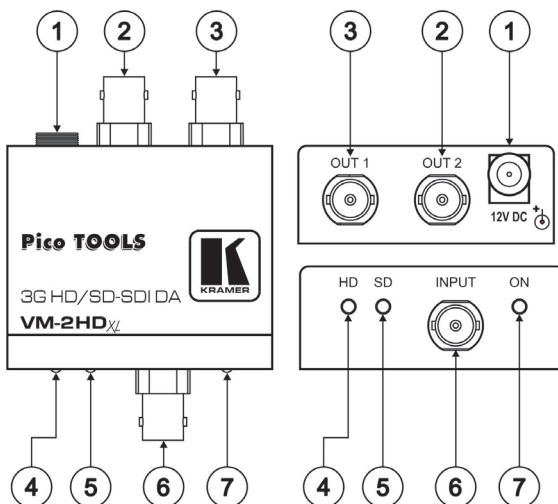


Figure 1: VM-2HDxl 3G HD/SD – SDI DA

#	Feature	Function
1	12V DC	+12V DC connector for powering the unit
2	OUT 2 BNC connector	Connects to the SDI acceptor 2
3	OUT 1 BNC connector	Connects to the SDI acceptor 1
4	HD LED	Lights when the SDI signal is HD
5	SD LED	Lights when the SDI signal is SD
6	INPUT BNC connector	Connects to the SDI source
7	ON LED	Lights when receiving power

High Definition (HD) means a video format, consisting of 720 active lines of progressive video or 1080 lines of progressive or interlaced video.

Standard Definition (SD) means an NTSC or PAL compatible video format, consisting of 480 (for NTSC) or 576 (for PAL) lines of interlaced video.

## 4 Connecting the VM-2HDxI



Always switch off the power to each device before connecting it to your **VM-2HDxI**. After connecting your **VM-2HDxI**, connect its power and then switch on the power to each device.

To connect the **VM-2HDxI**, as the example in [Figure 2](#) illustrates, do the following:

1. Connect an HD-SDI video source (for example, a camera) to the INPUT BNC connector.
2. Connect up to two video OUT BNC connectors to the appropriate HD-SDI video acceptors (for example, displays).  
You do not have to connect both outputs.
3. Connect the 12V DC power adapter to the power socket and connect the adapter to the mains electricity (not shown in [Figure 2](#)).

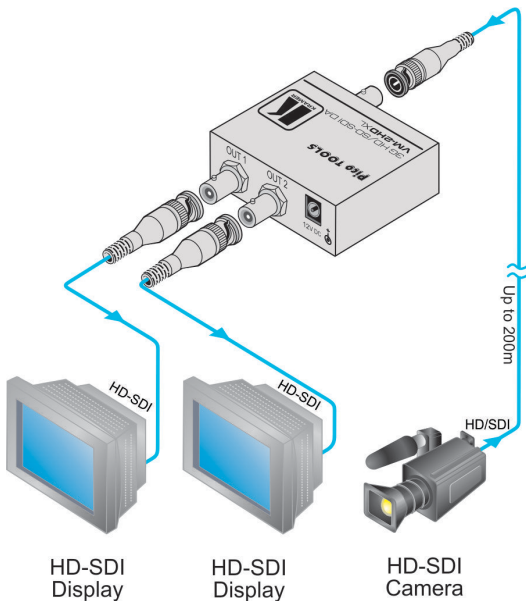


Figure 2: Connecting to the VM-2HDxI



## 5 Technical Specifications

INPUT:	1 SMPTE-259M / 292M / 344M / 424M serial video, 75Ω on a BNC connector
OUTPUTS:	2 equalized and reclocked SMPTE-259M / 292M / 344M / 424M outputs 75Ω on BNC connectors
MAXIMUM DATA RATE (-3dB):	2.97Gbps
MAX. OUTPUT LEVEL:	800mVpp /75Ω
COUPLING:	AC
POWER SOURCE:	12V DC, 250mA
DIMENSIONS:	6.22cm x 5.24cm x 2.41 cm (2.45" x 2.06" x 0.95") W, D, H.
WEIGHT:	0.14kg (0.31lbs) approx.
ACCESSORIES:	Power supply, mounting bracket
OPTIONS:	RK-4PT 19" rack adapter, BC-1X cable
Specifications are subject to change without notice at <a href="http://www.kramerelectronics.com">http://www.kramerelectronics.com</a>	

## LIMITED WARRANTY

We warrant this product free from defects in material and workmanship under the following terms.

### HOW LONG IS THE WARRANTY

Labor and parts are warranted for seven years from the date of the first customer purchase.

### WHO IS PROTECTED?

Only the first purchase customer may enforce this warranty.

### WHAT IS COVERED AND WHAT IS NOT COVERED

Except as below, this warranty covers all defects in material or workmanship in this product. The following are not covered by the warranty:

1. Any product which is not distributed by us or which is not purchased from an authorized Kramer dealer. If you are uncertain as to whether a dealer is authorized, please contact Kramer at one of the agents listed in the Web site [www.kramerelectronics.com](http://www.kramerelectronics.com).
2. Any product, on which the serial number has been defaced, modified or removed, or on which the WARRANTY VOID IF TAMPERED sticker has been torn, reattached, removed or otherwise interfered with.
3. Damage, deterioration or malfunction resulting from:
  - i) Accident, misuse, abuse, neglect, fire, water, lightning or other acts of nature
  - ii) Product modification, or failure to follow instructions supplied with the product
  - iii) Repair or attempted repair by anyone not authorized by Kramer
  - iv) Any shipment of the product (claims must be presented to the carrier)
  - v) Removal or installation of the product
  - vi) Any other cause, which does not relate to a product defect
  - vii) Cartons, equipment enclosures, cables or accessories used in conjunction with the product

### WHAT WE WILL PAY FOR AND WHAT WE WILL NOT PAY FOR

We will pay labor and material expenses for covered items. We will not pay for the following:

1. Removal or installations charges.
2. Costs of initial technical adjustments (set-up), including adjustment of user controls or programming. These costs are the responsibility of the Kramer dealer from whom the product was purchased.
3. Shipping charges.

### HOW YOU CAN GET WARRANTY SERVICE

1. To obtain service on you product, you must take or ship it prepaid to any authorized Kramer service center.
2. Whenever warranty service is required, the original dated invoice (or a copy) must be presented as proof of warranty coverage, and should be included in any shipment of the product. Please also include in any mailing a contact name, company, address, and a description of the problem(s).
3. For the name of the nearest Kramer authorized service center, consult your authorized dealer.

### LIMITATION OF IMPLIED WARRANTIES

All implied warranties, including warranties of merchantability and fitness for a particular purpose, are limited in duration to the length of this warranty.

### EXCLUSION OF DAMAGES

The liability of Kramer for any effective products is limited to the repair or replacement of the product at our option. Kramer shall not be liable for:

1. Damage to other property caused by defects in this product, damages based upon inconvenience, loss of use of the product, loss of time, commercial loss; or:
2. Any other damages, whether incidental, consequential or otherwise. Some countries may not allow limitations on how long an implied warranty lasts and/or do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations and exclusions may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights, which vary from place to place.

**NOTE:** All products returned to Kramer for service must have prior approval. This may be obtained from your dealer.

This equipment has been tested to determine compliance with the requirements of:

- EN-50081: "Electromagnetic compatibility (EMC);  
generic emission standard.  
Part 1: Residential, commercial and light industry"
- EN-50082: "Electromagnetic compatibility (EMC) generic immunity standard.  
Part 1: Residential, commercial and light industry environment".
- CFR-47: FCC\* Rules and Regulations:  
Part 15: "Radio frequency devices  
Subpart B Unintentional radiators"

### CAUTION!

- Servicing the machines can only be done by an authorized Kramer technician. Any user who makes changes or modifications to the unit without the expressed approval of the manufacturer will void user authority to operate the equipment.
- Use the supplied DC power supply to feed power to the machine.
- Please use recommended interconnection cables to connect the machine to other components.  
\* FCC and CE approved using STP cable (for twisted pair products)



For the latest information on our products and a list of Kramer distributors, visit our Web site where updates to this user manual may be found.

**We welcome your questions, comments, and feedback.**

Web site: [www.kramerelectronics.com](http://www.kramerelectronics.com)

E-mail: [info@kramerel.com](mailto:info@kramerel.com)



#### **SAFETY WARNING**

Disconnect the unit from the power supply before opening and servicing